Initial Summary of ESSAAC-17 Meeting Discussion

Feb. 18-19, 2004

Executive Secretary Notes Reviewed with Committee at End of Meeting

Wednesday morning discussion

- Wanted: A New Vision for a New Era
- With appeal equivalent to the Exploration Vision
- 15 years ago, we started with Earth System Science, then formulated EOS. Because we got to this stage, it is time to formulate a new vision
  - Again, science-driven
  - This time, information science should play a key role
- The next vision is not a measurement system, but a nervous system for the planet
  - Recent work from the bottom up supports this, e.g., what is emerging is the capability for scientists can work at the speed of thought--distance is seemingly eliminated.
  - But we lack a top-down articulation
- Discuss vision for ESE at next meeting

GRID Lessons (1)

- **Leaders in grid implementation are discipline scientists not computer scientists. Results come thru science-driven partnerships with the technology community. E.g., BIRN and ORION are drivers of the OptIPuter.**
- **The technology is changing faster than the cycle of NRAs-proposals-grants.**
- **These people are generous with their time, and will help us**
- **There are not any real barriers here, as demonstrated by these diverse examples**
- **Thus, we should be asking what kind of science can be enabled by these technologies?**
- **Need a coalition of early adopters, sponsored thru such means as REASoN**

GRID Lessons (2)

- **Data grid effort in Europe is quite a bit ahead of US. Dedicated optical pipes already in use in Europe and Japan; we gain by hooking up to them.**
- **Take advantage of the convergence of e-science and e-business middleware so that science "rides the wave" of commercial investment.**
- **The successful things we saw today got their science straight first, then sought computing solutions.**
- **Making the network as predictable as the computer itself is what will be important.**

GRID Lessons (3)

- **Two differing definitions of grid computing presented today**
  - **1) get info from different places**
  - **2) get access to computing resources**

- **The domain will support many different services. For example, ask "What is geographic knowledge?"**
  - **Measurements, but also**
  - **Processes**
  - **Data models**
  - **Maps / visualizations**
  - **Metadata.**

  This is like music; it provides the underlying infrastructure

- **Question: is the burgeoning diversity leading us toward adaptability or standardization? Answer: they are not mutually exclusive.**

Jim Gray (Microsoft)

- **What makes a successful grid application?**
  - **Success = wide use.**
  - **Successful grid app = content + applications**
- **EOSDIS has lots of data and no apps**
- **Good example: Terra Server from USGS**
- **Web services are web pages designed for programs to access, not people.**
- **Data bases are tough for science because databases do not have good spatial representation.**
- **Remember: "Computing is free, data is precious".**
- **"Objectifying science" – astronomers don't have common definitions for astronomical objects, nor common units. Being driven to it by this capability. Biology is much harder yet. Does Earth Science?**
- **Questions:**
  - **what are implications of having data of commercial or other value?**
  - **what about systems that change over time, like Earth systems**

TRMM De-orbit issue

- Chair of the GEWEX Science Steering Group (Sorooshian) wrote a letter to ESSAAC Chair asking the Committee to look into extending TRMM's mission lifetime.
- NASA plans to de-orbit based on fuel on board and the requirement for controlled de-orbit given size of pieces that would survive uncontrolled de-orbit
- ESSAAC believes that NASA is following a responsible course

Thursday AM Data Management Discussion

- Information on user characterization in response to ESSAAC request last meeting is very enlightening; ESSAAC/ESISS thanks NASA for its response

- It could be that provision of key data services would be transformational in terms of ease of use of ESE data, and thus support for ESE in the community.

- There is research in system integration that must be done to determine what kinds of data access & manipulation are accommodated, and which are not yet accommodated but could be with development and infusion of key technologies

- Actions:
  - Chair asks ESTO to report at next ESSAAC meeting on ESE-wide technology investments in IS
  - Chair tasks Bernard Minster, Tom Younk, Martha Maiden to talk to key members of the community and report on a plan for future prototyping efforts

ESISS to Work w/NASA on DIMP Development

- DIMP: Aaaaaccckk! Need a new name.
- Replace function basis with services basis and/or mandatory principles
- Need a methodology / decision making process that allows new technology components to connect to existing systems -- balancing stability & innovation
  - Roadmaps are not useful in this rapidly evolving arena
  - Must plan for smooth response to disruptive technological change
- Partnerships must be addressed earlier, especially with private sector
  - Action to J. Dangermond to draft a couple of paragraphs on COTS vs custom development
- Rapid prototyping as the development path
- There should be a companion to this that addresses computational modeling (in Research Plan?)
  - ESISS to assure this doesn't get lost

Summary of Topics Requested for Next ESSAAC Meeting

- Discussion of ESE Vision
- Progress on (retitled) Data & Information Management Plan
- Approach to future info systems prototyping efforts
- ESE-wide investments in Information science & technology
- Science presentation on computational modeling priorities
- Briefing on Education progress
- *Seek dates in July for next meeting*